REMOVAL OF THE BLADDER AND PROSTATE FOR CARCINOMA THROUGH A SUPRAPUBIC OPENING.[1]

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As a contribution to the subject, "The Choice Between the Suprapubic and Infrapubic Methods of Reaching Tumors and other Surgical Lesions of the Pelvic Organs," the following case is presented:

Mr. G., aged fifty-three years. No hereditary tendency, so far as known, to malignant disease. His general health had been good up to the time of the present trouble. About a year ago he accidentally discovered blood in the urine. This soon disappeared, but after a short time was again noticed. From now on we find a history of gradually increasing frequency of urination with intermittent hæmaturia and pain. After some months his general health began to fail, so that when he presented himself to the author, on October 2, 1901, for examination, it was found that he had lost considerable flesh and was suffering quite a little pain in the region of the neck of the bladder, and was obliged to urinate rather frequently, day and night. The urine contained blood, the amount of which varied considerably from time to time. There was also a small amount of pus and some albumen, probably depending upon the amount of blood and pus present. No casts nor tubercle bacilli were found. Upon rectal examination the prostate was found somewhat enlarged, quite firm, irregular, and tender. The passage of a sound was very painful. On this account an anæsthetic was given in order to make a cystoscopic examination. The cystoscope revealed a bleeding mass, involving the trigonum and extending beyond the ureteral openings. A diagnosis of carcinoma of the bladder, probably extending to the prostate, was therefore made. As no other abnormal conditions were found on examination, an operation was advised.

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[1] Read before the American Surgical Association, June, 1902.

The operation was performed October 5, 1901, in the following manner: A median longitudinal incision, about eight centimetres in length, was made just above the symphysis and opening into the cavum Retzii. The peritoneal fold was crowded upward, the bladder exposed, opened, and the growth carefully examined. This was found to involve the entire trigonum and to extend quite a little above both ureteral openings. It was apparent that the growth in the bladder wall had involved the prostate, and it would, therefore, be necessary to remove the base of the bladder and entire prostate *en masse*. The bladder was freed by blunt dissection on each side as far down as the base. The urethra was now divided close to the triangular ligament, and beginning at this point and working backward and upward the prostate and bladder were separated from the rectum. This, which was the most difficult part of the operation, was much facilitated by an assistant introducing two fingers into the rectum, thus raising all the parts well forward. The hæmorrhage during this part of the operation, although considerable, was not as severe as was anticipated, and was materially lessened by keeping the bladder well drawn forward; that is, towards the suprapubic opening, as fast as it was separated from the rectum. The ureters, as soon as they came into view, were easily divided beyond the disease. The right ureter was considerably enlarged and tortuous, owing to the obstruction which the growth had produced at the ureteral opening. Some small, enlarged lymph glands which were found in the connective tissue to the side of the bladder were removed. As the vertex of the bladder was not involved in the diseased process, a portion of it, about six to seven centimetres in diameter, was retained. The remainder of the bladder and prostate were removed. Small slits were made in the remnant of the bladder, and the ureteral ends drawn through and stitched with catgut. This small portion of bladder was then stitched by its edge to the inner edge of the suprapubic opening, except at the lower part. The cavity in the pelvis was packed with gauze and a large rubber drainage-tube inserted to the bottom of the cul-de-sac. The peritoneal cavity was not opened. Time of operation, about one hour and thirty minutes. There was considerable shock following the operation, but this was slowly recovered from, and in about two weeks the patient was able to sit up. The cavity filled in quite rapidly, and the tube was soon dispensed with. In about a month the patient had gained in strength so as to be up and around. The ureteral openings in the small, practically exstrophied bladder were easily seen, and the urine escaping from them was clear and, on analysis, normal, with the exception of a small amount of pus from the surrounding parts. On drawing the edges of the suprapubic opening together the lower part of the small bladder would dip slightly behind the upper edge of the symphysis pubis. A catheter introduced through the penis reached the small bladder, and nearly all the urine would drain off through the catheter. It was, therefore, retained permanently in position. The patient was walking out of doors daily, and his general health was improving rapidly. During the latter part of November, while out of doors one day, he was taken with a chill and developed a right-sided croupous pneumonia, from which she died December 3, 1901.

Autopsy, shortly after death, by Dr. Herzog, Professor of Pathology, Chicago Policlinic. Recent plastic lymph over lower portion of right pleura, with small amount of serous fluid in the pleural cavity. Lower half of right lung in beginning gray hepatization of croupous pneumonia. Left lung congested. Heart normal. Liver, spleen, and intestinal tract normal. The kidneys, ureters, remains of bladder, penis, and rectum, together with the surrounding tissues, were removed in a mass for study. The right kidney was small and atrophied, measuring seven and a half by four by three centimetres. Interstitial nephritis. The left kidney measured eleven and a half by seven and a half by four centimetres. It was normal in structure. The ureters were patent throughout and their openings free. The right ureter had contracted again to about its normal size. Considerable connective tissue was found between the small bladder and the rectum and the lateral walls of the pelvis. An interesting point is the remarkable formation of a tongue-shaped process lined with epithelium, continuous with the lower end of the bladder, surrounding the catheter, and extending almost to the posterior end of the urethra, a distance of some five or six centimetres. Metastases were found in the shape of a few enlarged glands near the bifurcation of the aorta and one quite large lymph gland near the hilus of the left kidney.

Microscopical examination of that portion of the bladder and prostate removed at the operation: That portion of the section directed towards the interior of the bladder presents a marked proliferation of atypical epithelial cells, the surface being ragged and irregular. As we proceed towards the deeper parts the epithelial mass sends out prolongations of epithelial cells, which soon break up into typical epithelial masses surrounded by connective tissue of varying thickness, thus forming distinct alveoli. The muscular layer is broken in places where it is penetrated by the epithelial masses. These masses extend into the prostate itself, which is quite extensively involved in the process. The microscopical examination thus leaves no doubt as to the carcinomatous nature of the growth, which began in the mucosa of the bladder and involved, secondarily, the prostate gland.

It is not the intention to present a detailed analysis of the cases of extirpation of the bladder, partial and complete, for carcinoma, as that has already been done by Wendel (*Beiträge zur klinischen Chirurgie,* 1898, Band xxii, S. 243). According to Wendel, the immediate mortality after complete extirpation is 60 per cent. (ten cases, six deaths). After partial extirpation, 24.5 per cent. (fifty-seven cases, fourteen deaths). This enormously high death-rate is due mostly to two causes, viz., shock or collapse and uræmia. The first of these, or shock, in some degree is almost a necessary accompaniment of so serious and severe an operation as urocystectomy, and will only be materially reduced when an improved technique diminishes the amount of blood lost and cuts short the time of the operation. The other cause of death, uræmia, is due to the prolonged effect of the anæsthetic on perhaps already diseased kidneys and to the necessity of interfering with the ureters. The implantation of the ureters into the rectum or other part of the bowel, as was done in a number of these cases, has now been shown to be an unjustifiable operation, as death is almost certain to follow, sooner or later, from an ascending pyelonephritis. In the female the vagina provides a means of escape from this dilemma, but this is denied us in the male. It is, therefore, particularly in this class of subjects that the plan of retaining a portion of the bladder wall, however small it may be, into which the ureters are to be implanted, and the whole to be partially stitched in the depth of the lower angle of the wound as near the posterior end of the urethra as possible, as described in the case here recorded, is recommended. It is very rare, indeed, when the bladder is so extensively involved in the carcinomatous process that a small portion of its wall, from some part or another, cannot be saved. It is all the more favorable to this method that the mucosa of the bladder contains no lymphatics, and metastasis in the mucosa by means of these channels is thus not the rule.

The reproductive power of the bladder is so remarkably great that even the smallest portion saved may, in a short time, develop into quite a comfortable receptacle for the urine. The author's intention was first directed to this fact by a case of traumatic rupture of the posterior urethra in a bicyclist. After his fall he found he was unable to urinate, and, being some distance in the country, was obliged to ride his wheel several miles to the city before he could secure relief. The physician whom he consulted endeavored to draw the urine with a metal catheter, and in doing so made several false passages leading into the prevesical space and injured the anterior wall of the bladder. Extravasation of urine throughout the prevesical space and perineum occurred, to which infection was soon added. When first seen by the author he was in a serious condition. A suprapubic incision was made and the bladder found in a sloughing condition. A large slough several centimetres in diameter, and composing the major portion of the bladder, with the exception of the trigone and a bit of the posterior wall, was removed. A perineal incision was added, and through-and-through drainage established. After some months the perineal and suprapubic openings closed. He could hold his urine at first an hour or so, and later five or six hours, and could go all night without difficulty. In this case practically an entire bladder was reformed from the base.

The remarkable regenerative power of the bladder has likewise been shown by Schwarz.[1]

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[1] Lo Sperimentale Anno xlv, Fasc. v.-vi, p. 484. Ref. Deutsche medicinische Wochenschrift, 1892, S. 696.

The points to which it is desired to direct attention in this brief article are:

(1) The suprapubic route for the removal of the bladder and prostate for malignant growths.

(2) The method of operating, which consists in dividing the urethra at the triangular ligament, and working from before backward in separating the prostate and bladder from the rectum, aided by an assistant's fingers introduced into the bowels.

(3) The use of constant traction on the bladder towards the suprapubic opening as fast as liberated from below as a means of materially reducing the amount of hæmorrhage.

(4) The retention of a portion of the bladder wall, however small, into which the ureters are to be stitched, and the whole to be fixed as near the posterior end of the urethra as possible, with a view to its ultimate regeneration into a serviceable bladder.